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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,302	11/24/2003	Robert David Allen	ARC920030072US1	7078

23980 7590 03/22/2006

REED INTELLECTUAL PROPERTY LAW GROUP
1400 PAGE MILL ROAD
PALO ALTO, CA 94304-1124

EXAMINER

MOORE, MARGARET G

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/721,302	ALLEN ET AL.	
	Examiner	Art Unit	
	Margaret G. Moore	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 75 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1- 6, 8- 15, 24- 30, 32- 39, 48- 50, 53- 58, 62, 66, 68- 71 and 73- 75 is/are rejected.
- 7) ☒ Claim(s) 7, 16 to 23, 31, 40 to 47, 51, 52, 59 to 61, 63 to 65, 67, 72 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 to 6, 8 to 15, 24 to 30, 32 to 39, 48, 53, 74 and 75 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kishimura et al., 2002/0013059.

Initially the Examiner draws attention to the definition of “nonpolymeric” as found on page 14 of applicants’ specification. This distinguishes the instant claims from various prior art references, as noted in paragraph 7 below.

Applicants refer to the US equivalent of this PGPub document on page 5, paragraph 11, of the specification. This states that the use of the compounds therein as resist materials appears to be compromised by the low glass transition temperature of the materials. This statement alone does not appear to be sufficient to establish a difference between the claims and the prior art for the reasons noted below.

Kishimura et al. teaches a nonpolymeric silsesquioxane as shown in the abstract. The R₁ groups are selected from various groups including acid cleavable substituents. See for instance Chemical Formulas 2 and 3 in paragraphs 24 and 27, in which R₂ and R₃ are groups released by an acid. Also note the working examples, paragraph 69 and on, which show various acid cleavable groups. It is important to note that these groups meet the formula for R^{CL} in claims 9 to 15. See for instance Chemical Formula 20 as it corresponds to claims 12 and 14 and Chemical Formula 14 as it corresponds to claims 13 and 15.

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The siloxane compound in Kishimura et al is a polyhedral silsesquioxane meeting the requirements of claims 3 and 4. Since the definition of R^1 includes alkyl groups, this reference meets the nonpolar R^{NP} group in claims 5, 6, 8 and 24.

For the reasons cited above, the siloxane compound in Kishimura et al. and that claimed appear to be structurally the same. Kishimura et al. fail to teach the glass transition temperature of the silsesquioxane and the acid cleavable groups thereon.

Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. Since the chemical composition claimed is the same as that taught in Kishimura et al., the glass transition temperatures must inherently be the same. Where applicant claims a composition in terms of a property or characteristic and the composition of the prior art is the same as that of the claim but the property or characteristic is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. See MPEP 2112 (III).

Claim 2 in Kishimura et al. includes an acid generating compound for generating acid through irradiation with light, meeting the requirement of a photoacid generator in instant claim 25.

4. Claims 55 to 58, 62, 66, 68 to 71 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimura et al.

The process taught on paragraphs 115 and on meet each of the claimed process steps with the exception of the baking temperature in (c). Paragraph 117 teaches heating the film but does not specify a temperature. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (i.e. doesn't require undue experimentation). The skilled artisan would be able to determine the operable temperature at which one should heat the film, thereby rendering this limitation obvious.

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Paragraph 121 teaches x-ray radiation meeting claim 62. Paragraph 62 teaches etching meeting claim 66. Paragraph 118 teaches removing soluble film meeting claim 69. For claim 70, note that the semiconductor substrate in paragraph 117 renders obvious a silicon wafer substrate. Paragraph 115 references an organic film that meets claim 71.

5. Claims 49, 50 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimura et al. as applied to claim 25 above and further in view of Takemura et al.

Kishimura et al. fail to teach the addition of a dissolution modifying additive.

Column 20, line 50 and on, teaches that the addition of dissolution inhibitors to photoresist compositions is well known in the art. Please note that it is prima facie obvious to add a known ingredient to a known composition for its known function. One having ordinary skill in the art would have found the addition of such a conventional ingredient to the composition of Kishimura et al. to have been obvious.

For claim 54, note column 17 which teaches onium salt photoacid generators. These are also known in the art to be used in resist compositions. In view of the teaching in Kishimura et al. to include an acid generator, the skilled artisan would have been motivated to turn towards known acid generators used in the art, thereby rendering obvious the selection of an onium salt as claimed.

6. Claims 7, 16 to 23, 31, 40 to 47, 51, 52, 59 to 61, 63 to 65, 67, 72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art fails to teach the inclusion of a R^P group as claimed. It also fails to teach or suggest the baking step in claims 59 to 61 or the use of UV radiation as found in claims 63 to 65. The particular organic materials in claim 72 and the addition polymer of claim 51 are not taught or suggested by Kishimura et al. either.


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7. As applicants are aware there are various references that teach silsesquioxanes having acid cleavable groups. These references fail to teach or suggest, however, the nonpolymeric compound as claimed, as well as the glass transition temperature requirement. See for instance Nakashima et al. and Hatakeyama et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret G. Moore whose telephone number is 571-272-1090. The examiner can normally be reached on Monday to Wednesday and Friday, 10am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Margaret G. Moore
Primary Examiner
Art Unit 1712

mgm
3/17/06